TALUTS, G.G.

ZYRYZNOV, P.S.; TALUTS, G.G.

Weak excitation spectrum of electron systems in an intermittent field. Fiz.met. i metalloved 3 no.3:547-548 '56. (MLRA 10:3)

1. Ural'skiy politekhnicheskiy institut imeni S.M. Kirova i Institut fiziki metallov Ural'skogo filiala AN SSSR.
(Electrons) (Field theory)

TALUTS, G. G.

AUTHORS: Taluts, G. G., and Shulyat'yev, S. A. 126-2-28/35

TITLE: On the problem of the spectrum of a system of electrons in an external field. (K voprosu o spektre sistemy elektronov vo vneshnem pole).

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.5, No.2, pp. 373-374 (USSR)

ABSTRACT: In Refs. 1 and 2 the frequency of oscillation of an electron plasma placed in a constant uniform electric field was obtained using the kinetic equation. In the present note an analogous problem is solved using the method of collective variables (Ref.3). The expression for the frequency of oscillation now derived contains extra terms compared with that given in Ref.1. These terms contain the square of the electric field. This is connected with the possibility of screening of the external field by the collective oscillations of the system. Polarization of the plasma connected with the oscillation of the system is proportional to $n'F/3n$ where n' is the number of collective degrees of freedom and F is the electric field. The present method based on the collective description of interactions in an electron plasma gives the possibility of calculating the polarization of the plasma connected with the oscillations of the latter,

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126-2-28/35

On the problem of the spectrum of a system of electrons in an external field.

particularly for plasmas with a small concentration (the case of semiconductors).
There are 4 references, 3 of which are Slavic.

SUBMITTED: February 5, 1957.

ASSOCIATION: Institute of Physics of Metals, Ural Branch of the Ac.Sc. USSR. (Institut Fiziki Metallov Ural'skogo Filiala AN SSSR).

AVAILABLE: Library of Congress.

Card 2/2

AUTHORS: Taluts, G. G. and Shulyat'yev, S. A. 126-5-3-23/31

TITLE: The Theory of the Stark Effect in Excitons (K teorii effekta Shtarka u eksitonov)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol. 5, Nr 3, pp 550-552 (USSR)

ABSTRACT: The paper is concerned with the effect of an external uniform electric field on the exciton levels in a semiconductor with an atomic lattice. Eq.(1) is the Hamiltonian of the system, in the second quantization representation. The subsequent argument involves considering one excited state only, with weak excitation, subject to the condition of homeopolarity, and neglecting volume effects, since the excitation energy does not depend on the spin. The Hamiltonian is further simplified by diagonalization, using canonical transforms. The operators used to isolate the exciton state are given immediately above Eq.(2); these obey the permutational relationships of Bose-Einstein statistics approximately. Eq.(2) then gives the elementary exciton excitation, where $A_n = L(mn, mn)$ is the electron energy in the state n, the G_k are Fourier components, and N is the electron

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density. $G_k = 0$ gives the usual Stark effect for isolated atoms. Eq.(4) relates to the degenerate case $d_{oo} = d_{11} = 0$. It is thus clear that interaction between the electrons reduces the Stark effect. The paper contains 4 numbered equations and 8 others. There are 4 references, 2 of which are Soviet, 2 English.

ASSOCIATION: Institut Fiziki Metallov Ural'skogo Filiala AN SSSR (Institute of Metal Physics, Ural Branch of the Ac.Sc., USSR)

SUBMITTED: June 7, 1957

1. Semiconductors--Electron transitions 2. Semiconductors--Lattices
3. Semiconductors--Excitation 4. Semiconductors--Theory

FAINTS, G. G.

In Russian

Determination of the frequency of oscillations of an electron plasma in a [illegible]

AUTHOR: Taluts, G. G. SOV/126-6-6-24/25

TITLE: On the Theory of Weak Excitations of an Assembly of Electrons in a Solid (K teorii slabykh vozbuzhdeniy sistemy elektronov v tverdom tele)

PERIODICAL: Fizika metallov i metallovedeniye, 1958, Vol 6, Nr 6, pp 1130-1132 (USSR)

ABSTRACT: The electron spectrum of a solid consists of several branches corresponding to various types of excitations. These excitations may be: exciton excitations (Refs.1, 2), plasma excitations (Refs.3, 4), or formation of pairs and holes (Ref.5). In each case these excitations are collective oscillations of the electron density of the assembly. The author consequently discusses exciton and plasma excitations together, using the method of collective coordinates and second quantisation described by Kanazawa (Ref.4), Tomonaga (Ref.6), Zyryanov and Taluts (Ref.7). The paper

On the Theory of Weak Excitations of an Assembly of Electrons in a Solid

is entirely theoretical. There are 7 references, 4 of which are Soviet, 1 English, and 2 Japanese.

ASSOCIATION: Institut fiziki metallov Ural'skogo filiala AN SSSR (Institute of Metal Physics, Ural Branch of the Academy of Sciences, USSR)

SUBMITTED: September 27, 1957.

SOV/56-35-6-32/44

24(5)

AUTHORS: Giterman, M. Sh., Zyryanov, P. S., Taluts, G. G.

TITLE: Bose-Excitations in Ion Crystals (Bozevskiye vozbuzhdeniya v ionnykh kristallakh)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 6, pp 1532-1537 (USSR)

ABSTRACT: The interaction between exciton and lattice oscillations has already frequently been investigated. Exciton energy and the connection between exciton-phonon interaction and the internal state of the exciton was investigated for strong coupling by S. I. Pekar and I. M. Dykman (Ref 1) as well as by V. A. Moskalenko (Ref 2) who used the method developed by N. N. Bogolyubov (Ref 3); for the case of intermediate coupling it was investigated by I. P. Ipatova (Ref 4) by the method developed by Lee, Low and Pines (Li, Lou, Payns) (Ref 5) and for weak coupling by I. M. Dykman (Ref 6), as well as by Moskalenko (Ref 7) and Haken (Khaken) (Ref 8). The authors of the present paper consider excitons to be elementary excitations in a multi-electron system, which interact with the lattice. The Hamiltonian of the system consists of three parts:

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$H = H_{el} + H_{ph} + H_{int}$ - the first term corresponds to the electrons, the second to the phonons, and the third describes electron-phonon interaction. The energy spectrum of a weakly excited state of the system is investigated on the assumption that in every node there exists an electron which is either in the ground state ($\lambda = 0$) or in an excited state ($\lambda = 1$). The Bose (Boze) excitations of such a system of electrons (excitons) interacting with polarization vibrations of a crystal are investigated by means of the second quantization representation. First, an expression is derived for the Hamiltonian H_{el} of the multi-electron system, then one for H_{ph}, and finally one for the interaction H_{int}. It is found that in the case of weak coupling the interaction leads to a decrease of exciton energy and to an increase of the effective exciton mass. This is in agreement with the results obtained by Dykman and Moskalenko (Refs 6, 7). In conclusion, a quantitative estimate of these effects is discussed in short. The authors thank S. V. Vonsovskiy for discussing the results obtained. There are 17 references, 12 of which are Soviet.

Bose-Excitations in Ion Crystals SOV/56-35-6-32/44

ASSOCIATION: Ural'skiy gosudarstvennyy universitet
(Ural State University)

SUBMITTED: July 9, 1958

Card 3/3

TALUTS, G. G.: Master Phys-Math Sci (diss) -- "Some problems in the quantum theory of collective movements in a solid body". Sverdlovsk, 1959. 6 pp (Min Higher Educ USSR, Ural State U im A. M. Gor'kiy), 150 copies (KL, No 16, 1959, 106)

9.4300 (1043, 1143 only)
26.2310

S/520/59/000/022/004/021
E032/E414

AUTHOR: Taluts, G.G.

TITLE: Collective Excitations in a System Consisting of Two Kinds of Interacting Particles

PERIODICAL: Akademiya nauk SSSR. Ural'skiy filial, Sverdlovsk. Institut fiziki metallov. Trudy, No.22, 1959, pp.33-36

TEXT: Collective properties of systems consisting of a large number of particles of two kinds have been investigated by Vlasov (Ref.5), Silin (Ref.6), Zyryanov (Ref.7) and Galasiewicz (Ref.8). The problem discussed by these authors is reconsidered by the present author on the basis of more general assumptions about the forces between the particles. It is assumed that only pair interactions are effective, i.e. the potential energy is a sum of terms each of which depends on the coordinates of two particles only, and any given particle interacts at the same time with a large number of other particles. The number of particles of the two kinds is assumed to be equal. In order to determine the collective degrees of freedom the collective coordinates

$$\rho_k^{(1)} = F_k(r_i R_\alpha), \quad \rho_k^{(2)} = G_k(r_i R_\alpha) \qquad (1)$$

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are introduced in addition to the coordinates of the separate particles r_i and R_α. The form of functions F_k and G_k depends on the specific problem under consideration. The Hamiltonian for a system of this type depends both on the individual and the collective variables, i.e.

$$H = H\left(r_i, \frac{\partial}{\partial r_i}, R_\alpha, \frac{\partial}{\partial R_\alpha}, \rho_\lambda^{(1)}, \frac{\partial}{\partial \rho_\lambda^{(1)}}, \rho_\lambda^{(2)}, \frac{\partial}{\partial \rho_\lambda^{(2)}}\right). \qquad (2)$$

It is assumed that by a suitable choice of F_k and G_k the collective part of the potential energy may be written down in the form

$$V = -\frac{1}{2}\sum_{\lambda<\mu} \nu(k)\rho_\lambda^{(1)}\rho_{-\lambda}^{(1)} + \frac{1}{2}\sum_{\lambda<\lambda_1} \mu(k)\rho_\lambda^{(2)}\rho_{-\lambda}^{(2)} + \cdots + \sum_{\lambda<\lambda_1} \varkappa(k)\rho_\lambda^{(1)}\rho_{-\lambda}^{(2)}. \qquad (3)$$

Collective Excitations in ...

where k_0 is the limiting wave number and $\nu(k)$, $\mu(k)$ and $\varkappa(k)$ are expansion coefficients. The introduction of the collective coordinates into the kinetic energy operator is achieved by the replacements

$$\nabla_r \to \Delta'_r + \sum_{k<k_0} \frac{\partial F_k}{\partial r} \frac{\partial}{\partial p_k^{(1)}} + \sum_{k<k_0} \frac{\partial Q_k}{\partial r} \frac{\partial}{\partial p_k^{(2)}} \qquad (4)$$

and similarly for ∇_R. In this expression ∇'_r involves differentiation with respect to the coordinates r which enter explicitly into the wave function. After diagonalization, the collective part of the Hamiltonian assumes the form

$$H_{coll} = \frac{1}{2} \sum_{k<k_0} \hbar\omega_1(k) \left(- \frac{\partial^2}{\partial q_k^{(1)} \partial q_{-k}^{(1)}} + q_k^{(1)} q_{-k}^{(1)} \right) + \frac{1}{2} \sum_{k<k_0} \hbar\omega_2(k) \left(- \frac{\partial^2}{\partial q_k^{(2)} \partial q_{-k}^{(2)}} + q_k^{(2)} q_{-k}^{(2)} \right). \qquad (8)$$

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Collective Excitations in ...

where

$$\omega^2_{1,2}=\frac{1}{2}(\omega^2_{01}+\omega^2_{02})+\omega^2_{012}\pm\left[\frac{1}{4}(\omega^2_{01}+\omega^2_{02})^2+\omega^4_{12}-\omega^2_{01}\omega^2_{02}\right]^{1/2}. \quad (9)$$

and

$$\omega^2_{01}=L^2_{\lambda\nu}(k),\ \omega^2_{02}=M^2_{\lambda\mu}(k),\ \omega^2_{012}=l^2_{\lambda\kappa}(k),$$
$$\omega^2_{12}=(L^2_{\lambda\kappa}(k)+l^2_{\lambda\mu}(k))(M^2_{\lambda\kappa}(k)+l^2_{\lambda\nu}(k)). \quad (10)$$

Thus, when the collective properties of the system are described by two kinds of variables, two branches of collective motion may exist. The second branch of the spectrum will exist if

$$\omega^4_{12}-\omega^2_{01}\omega^2_{02}<\omega^2_{012}(\omega^2_{01}+\omega^2_{02})+\omega^4_{012}. \quad (11)$$

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Collective Excitations in ...

The above theory is then applied to two special cases, namely $\varkappa(k) = 0$, $I_k = 0$, and the case where the system consists of positively charged ions and negatively charged electrons (Coulomb forces). In the former case there is only one branch of the spectrum and in the second there are two. The two frequencies of collective oscillations in the latter case are given by

$$\omega_1^2 = 4\pi e^2 N\left(\frac{1}{m}+\frac{1}{M}\right)\frac{k_0^2}{k_0^2+k^2}, \quad \omega_2^2 = \frac{4\pi e^2 N}{M}\frac{k^2}{k_0^2+k^2} \qquad (19)$$

In deriving the latter result the collective coordinates are taken to be the Fourier component of the charge density operator

$$\rho_k^{(e)} = e\rho_k^{(1)} = \frac{e}{\sqrt{N}}\left[\sum_i \exp(-i\vec{k}\vec{r}_i) - \sum_\alpha \exp(-i\vec{k}\vec{R}_\alpha)\right] \qquad (15)$$

and the ion density operator

$$\rho_k^{(M)} = M\rho_k^{(1)} = \frac{M}{\sqrt{N}}\sum_\alpha \exp(i\vec{k}\vec{R}_\alpha). \qquad (16)$$

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The variables $\rho_k^{(e)}$ describe fluctuations in the electric charge and $\rho_k^{(M)}$ describe the density fluctuations. The above theory can be applied to a wide range of systems consisting of two kinds of particles (electrons, holes in a semiconductor, s and d electrons in a transition metal, two kinds of atoms in an alloy etc.). There are 8 references: 4 Soviet and 4 non-Soviet.

PLISHKIN, Yu. M.; LUCHNIK, N.V.; TALUTS, G.G.

Spiral structure of the molecules of desoxyribonucleic acid and the mechanism of their cell-reproduction. Biofizika, 4 no.3:275-283 '59. (MIRA 12:7)

1. Ural'skiy filial AN SSSR, Sverdlovsk.
(DESOXYRIBONUCLEIC ACID,
spiral structure & auto-duplication (Rus))

SKROTSKIY, G.V. [Skrots'kyi, H.V.]; TALUTS, G.G. [Taluts, H.H.]

Extending Frenel's formulae to the case of absorbing uniaxial crystals. Ukr.fiz.zhur. 4 no.6:724-728 N-D '59. (MIRA 14:10)

1. Ural'skiy politekhnicheskiy institut im. Kirova.
(Crystals--Optical properties)

SOV/126-7-1-24/28

AUTHORS: Zyryanov, P.S., Borisov, B.S. and Taluts, G.G.

TITLE: Singularities of Sound Propagation in a Metal (Osobennosti rasprostraneniya zvuka v metalle)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol.7, Nr.1, pp 153-154 (USSR)

ABSTRACT: For describing the propagation of sound waves of sufficiently high energy-density (e.g. ultrasonic waves) the lattice binding energies in a metal may be ignored and the metal treated as an ionic plasma. The following relation will then hold:

$$\Phi = \frac{M}{\sqrt{2}e}\left[1 + \frac{\omega^2}{\omega_0^2}\right]^{-1}\frac{\omega^2}{q}X,$$

Here X is the amplitude of the ultrasonic wave and Φ the associated electric field potential; M, e are respectively the ionic mass and charge; ω, q are respectively the ultrasonic angular frequency and wave-number; finally ω_0 is a characteristic angular frequency of the plasma,

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given by:

$$\omega_o^2 = \frac{4\pi ne^2}{M}$$

where n is the ionic density. Furthermore the acoustic energy flux S in the z-direction may be written as:

$$S = c\varepsilon$$

where c is the sound velocity and

$$\varepsilon = \frac{Mn\omega^2}{2} |X|^2 \exp(-2\alpha z)$$

with α denoting the sound absorption coefficient. A relation between the acoustic and electric energy fluxes
Card 2/4 which follows from the above is:

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$$-\frac{\partial \varepsilon}{\partial t} = -\frac{\sigma m}{M} |\nabla \phi|^2$$

where t is time and σ is the electrical conductivity. Now the left-hand side of this last equation must clearly equal div S, and from this follows immediately the relation between α and σ :

$$\alpha = \frac{\omega^2 m}{e^2 n \sigma} \cdot \sigma$$

This shows that "anomalous" acoustic propagation (acoustic absorption bands) will occur under conditions favouring high electrical conductivity: energy removed from the sound waves appears as electric current. Such a current will produce heating of the metal and the magnitude of this effect is discussed for some typical cases. There are

Card 3/4 3 references, of which 2 are Soviet and 1 English.

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Singularities of Sound Propagation in a Metal

ASSOCIATION: Ural'skiy politekhnicheskiy institut imeni S.M. Kirova (Ural Polytechnical Institute imeni S.M. Kirov); Institut fiziki metallov AN SSSR (Metal Physics Institute, Ac. Sc., USSR)

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24(5), 24(6) SOV/126-7-2-22/39

AUTHORS: Taluts, G. G. and Giterman, M. Sh.

TITLE: On the Theory of Exciton Excitations (K teorii eksitonnykh vozbuzhdeniy)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1959, Vol 7, Nr 2, pp 291-293 (USSR)

ABSTRACT: The exciton energy spectrum was considered in Refs 1-3. In those papers atomic functions were used. In the present note one-particle functions of the molecular type are employed which means that it is possible to introduce explicitly into the exciton energy spectrum both the electron and hole effective masses and to compare it with results obtained by other workers. As in Ref 1 it is assumed that at each lattice point there is on the average only one electron which can be either in the ground state ($\lambda = 0$) or in an excited state ($\lambda = 1$). The Hamiltonian for a system of electrons in a weakly excited state is taken from Ref 1 and is given in Eq (1). The exciton energy is given by Eq (14) and the activation energy and the effective mass of an exciton is given by Eq (15). These equations are identical with those obtained by Takeuti (Ref 5). In

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the latter paper the exciton problem was considered in the configuration space by the Heitler-London method using molecular type functions.
There are 5 references, 3 of which are Soviet, 2 English.

ASSOCIATIONS: Institut fiziki metallov AN SSSR (Institute of Metal Physics, Ac.Sc. USSR) and Ural'skiy gosudarstvennyy universitet (Ural State University)

SUBMITTED: March 30, 1958

Card 2/2

SOV/126--7-5-3/25

AUTHORS: Guseva, G. I., Taluts, G. G.

TITLE: On the Theory of Collective Excitations of a System of Electrons in a Solid Body (K teorii kollektivnykh vozbuzhdeniy sistemy elektronov v tverdom tele)

PERIODICAL: Fizika metallov i metallovedeniye, 1959, Vol 7, Nr 5, pp 658-665 (USSR)

ABSTRACT: The method of collective coordinates and momenta is used to study the spectrum of collective excitations of a system of electrons in a solid body. Transitions between bands as well as witnin bands are taken into account. The connection between oscillations of the plasma type and Frenkel' type exciton excitations is elucidated. This is particularly important in semiconductors where both types of excitation play an important role. The Hamiltonian is written in the form given by Eq (3), where a^{+}_{α} , a_{α} are Fermi operators and $L(\alpha\alpha')$ and $F(\alpha_1\alpha_2;\alpha'_1\alpha'_2)$ are matrix elements of the additive and binary type. The Fourier components of the

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electron density given by Eq (4) are taken as the collective coordinates and the corresponding momentum operator is taken in the form of Eq (5). In the second quantisation representation the collective variables are given by Eqs (6) and (7). The new operators given by Eq (8) are shown to obey Bose-Einstein commutation relations and the matrix elements $\rho_{\vec{k}}(\alpha\alpha')$ and $\rho'_{k}(\alpha\alpha')$ satisfy condition (9). Using the operators given by Eq (8), the Hamiltonian given by Eq (3) can be rewritten in the form of Eq (10). When the system does not deviate very considerably from the ground state, only the first three terms need be taken. The expansion coefficients are given by Eq (11). The Hamiltonian for the collective excitations is then given by Eq (12) where L_2 and L'_2 are certain combinations of the matrix operators $L(\alpha\alpha')$, $\rho(\alpha\alpha')$ and $\rho'(\alpha\alpha')$. $G(k)$ is the Fourier component of the kernel of the inter-electron interaction. Exchange effects are neglected. The Hamiltonian (12) is diagonalized by the usual method (Ref 10). The energy of the collective excitation turns out to be given by Eq (13),

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where A and C are given by Eq (14). It is shown on the basis of these equations that the spectrum of collective excitations when electron transitions within bands are taken into account consists of a series of energy bands, each of which is associated with a different form of excitation of the system. In experiments concerned with the scattering of fast charged particles by crystals, one normally observes a few absorption lines. One of these lines can often be associated with purely plasma oscillations of the electron system (Ref 1). The present calculation

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indicates that the remaining lines are due to other forms of excitation. There are 11 references, of which 5 are Soviet, 5 English.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet imeni A. M. Gor'kogo, Institut fiziki metallov, AN SSSR (Urals State University imeni A. M. Gor'kiy, Institute of the Physics of Metals, Academy of Sciences, USSR)

SUBMITTED: June 23, 1958.

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SOV/126-8-5-26/29

18.7510

AUTHORS: Arkharov, V.I., Borisov, B.S., Vangengeym, S.D., and Taluts, G.G.

TITLE: On the Question of the Mechanism of Intercrystalline Internal Adsorption in Dilute Solid Solutions

PERIODICAL: Fizika metallov i metallovedeniye, Vol 8, 1959, Nr 5, pp 792-794 (USSR)

ABSTRACT: The interaction between the electron shells of atoms in a dilute solid solution can strongly affect the behaviour of impurity atoms in this solid solution. This applies particularly to intercrystalline internal adsorption. By taking into consideration the electron interaction it is possible to describe the atomic mechanism of internal adsorption and associate it with quantitative data available in this field. If there are defects or structural non-uniformities in the lattice the impurity atoms react with them. This is a long-range order interaction and hence screening must become evident, i.e. the impurity atoms must behave as if they possessed a "screened" atomic radius. As any structural non-uniformity (among them grain boundaries) can be considered to be a dislocation system, for an

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approximate description of the interaction between impurity atoms in a solid solution and lattice distortions, it is possible to use Webb's calculation (Ref 11). In this way one can evaluate the number of atoms, N_o, diffusing through the grain body to the dislocation system modelling the intercrystalline boundary, i.e. the number of atoms experiencing intercrystalline internal adsorption. Such a calculation was carried out by the authors for the solid solutions Ag-Tl, Ag-Zn, Ag-Pb, Cu-Mg and Cu-Sn. The concentrations of horophilic elements in these alloys were considerably lower than their volume solubility. The results of the calculations are reported in the table on p 793. Although the calculated and experimental results agree quite well, a discrepancy can be observed which in a few cases exceeds the absolute errors in lattice parameter measurements. Among the possible reasons for this discrepancy the following can be quoted. First, Webb's formula, which contains macroscopic factors, is somewhat artificial for the description of phenomena of an atomic

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scale, and can be justified only as a first approximation. Secondly the influence of the relative orientations of neighbouring grains which can change the width of the intercrystalline zone, and the associated lattice parameter (this change varying from one grain group to another) is not taken into consideration. Thirdly the block structure which can change from one test to another can, as a result of internal adsorption at block boundaries, change the magnitude of the lattice parameter somewhat. These facts are subjects for further investigation.

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There are 1 table and 11 references, of which 4 are Soviet, 6 English and 1 German.

ASSOCIATION: Ural'skiy gosudarstvennyy universitet: Institut fiziki metallov AN SSSR (Ural'sk State University: Institute of Physics of Metals, Acad.Sci. USSR)

SUBMITTED: June 19, 1959

21(7)
AUTHORS: Zyryanov, P. S., Taluts, G. G. SOV/56-36-1-20/62

TITLE: On Acoustic-electric Phenomena in a Degenerated Electron-ion Plasma (O zvuko-elektricheskikh yavleniyakh v vyrozhdennoy elektronno-ionnoy plazme)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 1, pp 145 - 148 (USSR)

ABSTRACT: In the propagation of a longitudinal ultrasonic wave in an electron-ion plasma the amplitudes of the density of ions and electrons are different because of the great difference of the volume-compressibility of the electron liquid and the ion liquid. This fact causes an electric space charge which in turn generates a longitudinal electric field (which depends on the frequency of the ultrasonic waves). Because of the interaction of the progressing ultrasonic wave with thermal acoustic vibrations, the energy of the ultrasonic waves is absorbed and scattered. These effects can be taken into account by introducing a finite electric conductivity of the plasma, i. e. by taking into account the collisions of the electrons with the thermal vibrations of a plasma. For finite

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values of σ, the energy of the longitudinal electric field will be dissipated as Joule's (Dzhoul) heat. The authors of the present paper show that this mechanism of the dissipation of ultrasonics in a metal gives the right order of magnitude for the absorption coefficient. The investigated dynamic system consists of a great number of electrons and ions in which the ultrasonic wave propagates. The basic equations of this system are given explicitly. These equations have an exact solution for a system being in a state of constant density $|\psi_{\gamma j}|^2 = \text{const.}$ $\psi_{\gamma j}$ denotes the self-consistent wave function of the j^{th} particle, $\gamma = 1$ corresponds to electrons and $\gamma = 2$ to ions. The above mentioned equations are a system of Hartree (Khartri) equations which was generalized for unsteady states. The present paper deals with the calculation of the potential of the longitudinal electric field of the ultrasonic waves by means of constants which characterize the plasma and the amplitudes of the ultrasonic waves. The calculations are discussed step by step. Especially, the case of a standing ultrasonic wave is discussed. The influence of

the ions each with another can be reduced to the shielding of the ion charge. Finally, the absorption coefficient α of sound in an electron-ion plasma is calculated. There are 8 references, 6 of which are Soviet.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute for the Physics of Metals of the Academy of Sciences, USSR)

SUBMITTED: June 7, 1958

21 (8)
AUTHORS: Orlov, A. N., Galishev, V. S., Taluts, G.G. SOV/20-126-5-17/69

TITLE: Calculation of the Multiple Scattering of Gamma Rays of the Uranium and Thorium Series (Raschet mnogokratnogo rasseyaniya gamma-luchey semeystv urana i toriya)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 5, pp 975 - 978 (USSR)

ABSTRACT: This article presents several new methods and results of the calculation of multiple scattering of gamma rays ($E > 0.5$ Mev) of the elements of the uranium and thorium series. The experimental data utilized is mentioned in references 2-4 and listed in table 1. The authors first investigated a point source in an unlimited medium. The authors caloulated the spectra of the scattered radiation of a monochromatic point source in an infinitely extended absorber (water, graphite, aluminum, iron) by the polynomial method (Ref 9) for the energies E_o=0.5, 1.0, 1.33, 1.50, 2.0 and 2.6 Mev. By interpolation and superposition of the scattering spectra calculated, the distances $\mu_o r$ = 1, 2, 3, 5, 6, 10, 15, 20 (μ_o denotes the absorption coefficient for

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quanta with the energy E_o) were determined. As an example, figure 1 shows the intensity spectrum at r = 80 cm for aluminum absorbers (both for uranium and thorium sources). In the following, absorbers consisting of several layers are investigated, namely, plane-parallel layers of equal thickness. The result is practically used for the numerical computation of a geophysical example: a granite plate of known composition, given thickness and density, containing uranium or thorium sources, and lying beneath an inactive layer of the same granite is investigated. In conclusion, the authors briefly discuss in the third part of this article some particularities of the radiation of an active layer, and in the last part special effects of absorption in an inactive layer. Figure 2 shows the spectrum lg I λ = f(E) of the radiation of an active layer after passing through an inactive graphite layer of the thickness h (for various values of h) and of the density 2.7. The E- and h-dependence are discussed. Contributors were : R. I. Anishchenko, Yu. M. Plishkin, I. M. Shepeleva, Yu. P. Bulashevich and the staff members of the Vychislitel'nyy tsentr AN SSSR (Computing Center of the AS USSR).

Calculation of the Multiple Scattering of Gamma Rays of the Uranium and Thorium Series SOV/20-126-5-17/69

There are 1 figure, 1 table, and 11 references, 5 of which are Soviet.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Metal Physics of the Academy of Sciences, USSR)

PRESENTED: January 16, 1959, by L. A. Artsimovich, Academician

SUBMITTED: January 15, 1959

Card 3/3

LUCHNIK, N.V.; PLISHKIN, Yu.M.; TALUTS, G.G.

Mechanisms of the self-duplication of elementary cell structures. Pt.2: Physical principles of the spiral form of certain macromolecules and the possible mechanism of DNA replication. TSitologiia 2 no.1:57-61 Ja-F '60. (MIRA 13:5)

1. Otdel biofiziki i radiobiologii Instituta biologii Ural'skogo filiala i Otdel teoreticheskoy fiziki Instituta fiziki metallov AN SSSR, Sverdlovsk.
(NUCLEIC ACIDS) (MOLECULES)

S/126/60/009/03/002/033
E032/E414

AUTHORS: Petrov, A.N., Taluts, G.G. and Giterman, M.Sh.

TITLE: On the Theory of the Stark Effect for Excitons in Ionic Crystals

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol 9, Nr 3, pp 327-331 (USSR)

ABSTRACT: In a previous paper (Ref 1) the authors considered the interaction of excitons with lattice vibrations. The aim of the present note is to generalize that calculation to the case when an external electric field is present. The shift of the energy levels of the exciton in the external field was considered by Korenblit (Ref 2), Samoylovich and Korenblit (Ref 3) and Gross et al (Ref 4), using the single particle approach but they did not include electron-electron and electron-phonon interactions which, in general, will have an effect on the dependence of the energy level shift on the external field. In the present note, the excitons are looked upon as Bose-type collective excitations of a many-electron system. Using the Hamiltonian given by Eq (2) it is shown that if the electron-electron and electron-phonon

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S/126/60/009/03/002/033
E032/E414

On the Theory of the Stark Effect for Excitons in Ionic Crystals

interactions are taken into account, a linear effect appears in addition to the quadratic effect, ie the order of the Stark effect is reduced. Existing experimental data do not resolve the problem as to whether the level shift dependence on the field is linear or quadratic but do indicate that there is a reduction in the order of the Stark effect as compared with isolated atoms. There are 7 references, 6 of which are Soviet and 1 English.

ASSOCIATION: Institut fiziki metallov AN SSSR
(Institute of Physics of Metals, AS USSR)

SUBMITTED: September 12, 1959

Card 2/2

S/056/62/043/006/028/067
B112/B186

AUTHORS: Zyryanov, P. S., Taluts, G. G.

TITLE: Non-equilibrium electron and phonon systems in an external magnetic field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 6(12), 1962, 2136 - 2142.

TEXT: For electrons interacting with a quantized Bose field in the presence of an external homogeneous magnetic field, the following kinetic equations are derived:

$$\frac{\partial f(\nu)}{\partial t} = \sum_{\nu',q} \frac{2\pi}{\hbar} |C_q|^2 \{|\langle \nu' | e^{iqr} | \nu \rangle|^2 \delta(E_{\nu'} - E_\nu - \hbar\omega_q) \times [f(\nu')(1 - f(\nu))(N_q + 1) - f(\nu)(1 - f(\nu'))N_q] + |\langle \nu' | e^{-iqr} | \nu \rangle|^2 \delta(E_{\nu'} - E_\nu + \hbar\omega_q) \times [f(\nu')(1 - f(\nu))N_q - f(\nu)(1 - f(\nu'))(N_q + 1)]\}, \quad (4)$$

$$\frac{\partial N_q}{\partial t} = \sum_{\nu\nu'} \frac{4\pi}{\hbar} |C_q|^2 \{|\langle \nu' | e^{iqr} | \nu \rangle|^2 \delta(E_{\nu'} - E_\nu - \hbar\omega_q) \times [(f(\nu') - f(\nu))N_q + f(\nu')(1 - f(\nu))]\}. \quad (5)$$

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Non-equilibrium electron ...

Here, N_q denotes the phonon distribution function, and C_q the electron-phonon interaction constant. Closed formulae are derived for the kinetic coefficients $D_{\alpha\beta}$ and A_α (Fokker-Planck coefficients) entering the kinetic equation $\partial f/\partial t = \partial(D_{\alpha\beta}\partial f/\partial p_\beta)/\partial p_\alpha + \partial(A_\alpha f)/\partial p_\alpha$ which is obtained from Eq. (4) for $\hbar = 0$.

ASSOCIATION: Institut fiziki metallov Akademii nauk SSSR (Institute of Metal Physics of the Academy of Sciences USSR)

SUBMITTED: June 3, 1962

ZYRYANOV, P.S.; TALUTS, G.G.

Theory of strengthening ultrasonic waves. Fiz. met. i metalloved. 14 no.2:287-288 Ag '62. (MIRA 15:12)

1. Institut fiziki metallov AN SSSR.
(Ultrasonic waves)

BORISOV, B.S.; VOLKENSHTEYN, N.V.; ZYRYANOV, P.S.; TALUTS, G.G.

Volt-ampere characteristics of bismuth at low temperatures in a magnetic field. Fiz. met. i metalloved. 16 no.4:624-626 O '63. (MIRA 16:12)

1. Institut fiziki metallov AN SSSR.

ANISHCHENKO, R.I.; TALUTS, G.G.

Incoherent scattering of X rays in the Thomas-Fermi-Dirac model for atoms in a metal. Fiz.met. i metalloved. 18 no.5:641-644 N '64. (MIRA 18:4)

1. Institut fiziki metallov AN SSSR.

L 1674-66 EWT(1) IJP(c) GG

ACCESSION NR: AP5021941 UR/0126/65/020/002/0297/0299 38
539.293:537.3.01 35 B

AUTHOR: Petrov, A.N.; Taluts, G. G. 44,55 44,55

TITLE: On the quantum theory of the tensor of permittivity in a strong electrical field 21,44,55

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 2, 1965, 297-299

TOPIC TAGS: permittivity tensor, quantum theory, electrical field, strong electrical field, lattice period, free path time, absorption factor, electromagnetic wave

ABSTRACT: The permittivity tensor of an electron gas present in a periodic lattice field within a strong electrical field is considered. The electrical field F is regarded as strong if the oscillation period of electron energy $T = 2\pi h/aF$ (where a is the lattice period) is shorter than the free-path time τ. In real conditions this requirement apparently is satisfied only for current carriers in narrow zones. Accordingly, the authors consider at first the case of a narrow zone when constructing the permittivity tensor $\epsilon_{ij}(\omega, q)$ for a strong electrical field. The formula for the tensor is written on the basis of wave functions

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ACCESSION NR: AP5021941

derived for a simple cubic lattice, on taking into account particle density, electron velocity along the i axis, and the electron distribution function. In addition general expressions for the absorption factors of electromagnetic waves are derived and the formula of the permittivity tensor is correspondingly refined to

$$\varepsilon_{ij}(\omega, q) = \delta_{ij}\left(1 - \frac{4\pi e^2 N}{m\omega^2}\right) - \frac{4\pi e^2}{\omega^2}\sum_{ss'} \frac{f_{01}(E_{s'1}) - f_{02}(E_{s2})}{E_{s'1} - E_{s2} - \hbar\omega - i\hbar\Gamma} \times \\ \times v_i(s'1, s^2, -q)\, v_j(s'1, s^2, q), \qquad (1)$$

where the subscripts 1, 2 are zone numbers. The absorption factor for the frequencies satisfying the condition $E_g - \hbar\omega \gg {}^aF$ (E_g is the width of the forbidden zone) equals

$$\gamma = \frac{2\pi e^2 |v|^2}{\omega c \sqrt{\varepsilon(E_g - \hbar\omega)}} \exp\left\{-\frac{E_g - \hbar\omega}{aF} \ln \frac{E_g - \hbar\omega}{\sqrt{a_1^2 + a_2^2 - 2a_1 a_2 \cos\frac{qa}{2}}}\right\}. \qquad (2)$$

L 1674-66

ACCESSION NR: AP5021941

3

The frequency dependence of γ is close to that obtained by Keldysh (ZhETF, 1958, 34, 1138) and Callaway (J. Phys. Rev., 1963, 130, 549; 1964, A134, 998). Thus the presence of an exponential frequency-dependence of the absorption factor is confirmed. Orig. art. has: 8 formulas.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Metal Physics AN SSSR)

44,55

SUBMITTED: 17Feb65 ENCL: 00 SUB CODE: EM, NP

NO REF SOV: 004 OTHER: 003

Card 3/3 DP

L 18770-66 EWT(1)/EWT(m)/EPF(n)-2/T/EWP(t)/ETC(m)-6 IJP(c) JD/WW
ACC NR: AP6002740 SOURCE CODE: UR/0056/65/049/006/1942/1949

AUTHORS: Zyryanov, P. S.; Taluts, G. G.

ORG: Institute of Physics of Metals, Academy of Sciences SSSR (Institut fiziki metallov Akademii nauk SSSR)

TITLE: Contribution to the theory of absorption of sound in solids

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 6, 1965, 1942-1949

TOPIC TAGS: sound absorption, sound propagation, phonon interaction, electron interaction, crystal lattice, acoustic damping, thermoelectric power

ABSTRACT: The authors derive the equation of motion of isotropic elastic medium, describing the propagation and absorption of sound interacting with thermal phonons. The method used in the derivation is similar to that employed by V. P. Silin (ZhETF v. 38, 977, 1960) for the equation of motion of a lattice interacting with electrons. The equation derived describes the dependence of the elastic constants

Card 1/2

on the temperature, their space-time dispersion, and the propagation and the absorption of the sound. The results obtained are valid for both high and low frequencies. The scattering of sound by thermal vibrations and decay processes are both taken into account. A formula valid for all frequencies is obtained for the sound damping decrement. This expression is also valid for arbitrary ratio of the phonon energy to the temperature. Several particular cases of this ratio are analyzed in detail. It is pointed out in the conclusion that a study of the differential thermoelectric power due to phonon drag in quantizing magnetic fields may yield information on the dependence of the sound damping decrement in the high-frequency region, where direct experiments on the measurement of the sound absorption is presently difficult. The authors are grateful to V. G. Bar'yakhtar, S. V. Peletminskiy, and V. P. Silin for useful discussions. Orig. art. has: 27 formulas.

SUB CODE: 20/ SUBM DATE: 23Jul65/ ORIG REF: 004/ OTH REF: 007

TALUYEVSKIY, Yu.N., inzhener.

The problem of mixed gas carburization. Stal' 16 no.3:260-262 Mr '56. (MLRA 9:7)

1.Yenakiyevskiy metallurgicheskiy zavod.
(Cementation (Metallurgy))

TAL'VANSKI, I.I.

1467

537.533
Theory of Electron Emission from a Metal in an Electric Field. A. E. Glauberman & I. I. Tal'vanski. (C. R. Acad. Sci. U.R.S.S., 1st June 1951, Vol. 78, No. 4, pp. 661-664. In Russian.)

TALVE, L.

Methods for testing various roof-bolting structures. Khim. i tekh. gor. slan. i prod. ikh perer. no.11:5-9 '62.

Determining the state of the working unit of roof bolting from the loading characteristic. 10-31 (MIRA 17:3)

TALVE, L.

Measuring the tension of bolting. Khim. i tekh.gor.slan. i prod. ikh perer. no.12:7-17 '63.

Determining the basic parameters of roof bolting. Ibid.:18-29

Determination of the state of the working unit of roof bolting considering the time factor. Ibid.:30-48 (MIRA 17:2)

TALVE, I.

Use of rod bolting under the conditions of a watered workings roof. Khim. i tekh. gor. slan. i prod. ikh. perer. no.13: 7-20 '64. (MIRA 18:9)

TALVE, L.G.

Fundamentals of analyzing roof bolting deformation from its characteristics. Khim. i tekh. gor. slan. i prod. ikh perer. no.10:45-64 '62.

Determining the state of the working unit of mine roof bolting. Ibid.:65-77 (MIRA 17:5)

5(4)
AUTHORS: Tal'vik, A. I., Pal'm, V. A. SOV/76-33-6-8/44

TITLE: Investigation of the Kinetics and of the Mechanism of Acid Hydrolysis of Ethyl Acetate (Issledovaniye kinetiki i mekhanizma kislotnogo gidroliza etilatsetata)

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 6, pp 1214-1220 (USSR)

ABSTRACT: Hammett(Ref 17) found a linear function between the logarithm of the reaction rate constant of the first order and the function of the acidity H_0 of the medium in the acid hydrolysis of ethyl acetate (I), the inclination of this straight line being equal to One. On the strength of the foregoing, hydrolysis is preceded by a protonization of (I); the question, however, which is the oxygen atom to which the proton adds to effect hydrolysis, is still pending. Pal'm (Ref 18) derived a general equation setting a relationship between the reaction rate constant (RRC) of the acid-catalytic reaction and the acidity of the medium. Since in the (I) hydrolysis the addition of a single proton is sufficient, this equation is given the following simplified form:

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$k = \frac{k h_o}{K_a + h_o}$ (2) (K_a = constant of basicity of the reagent, $-\lg h_o = H_o$). With low h_o values this equation goes over to that of Hammet, whereas in the case of higher h_o values the constant is equal to the true RGK, which fact corresponds to a full protonization of the reagent. The last mentioned concept is due to N. M. Chirkov, who was the teacher of one of the authors of the present paper. In the work under review, a more thorough investigation was carried out of the mechanism of acid hydrolysis of (I), and the applicability of equation (2) to this reaction was checked. A method was worked out for the spectrophotometric control of the reaction course. A table concerning the ultraviolet absorption spectra is supplied (Table 1). Pertinent parallel experiments were made to control the determination accuracy (Table 2); the data obtained for the velocity constant k_1 are also given (Table 3). The invariability of the value k_1 in the concentration range of 40 - 70% sulphuric acid in which the quantities $[H_2C]$, $[H_3O^+]$, $[HSO_4^-]$ and $[H_2SO_4]$

change strongly is indicative of the fact that the reaction stage determining the rate of hydrolysis, is really monomolecular. A precision reaction mechanism is suggested for the (I) hydrolysis, and the applicability of reaction (2) to this reaction is confirmed. There are 3 figures, 3 tables, and 21 references, 4 of which are Soviet.

ASSOCIATION: Tartuskiy gosudarstvennyy universitet (Tartu State University)

SUBMITTED: September 9, 1957

5(4)
AUTHORS: Khaldna, Yu. L., Tal'vik, A. I., Pal'm, V. A.

SOV/20-126-1-32/62

TITLE: The Dependence of the Rate of Acidic-catalytical Reaction on the Basicity of the Reagent in the Case of the "General Acidic Catalysis" (Zavisimost' skorosti kislotno-kataliches-koy reaktsii ot osnovnosti reagenta v sluchaye "obshchego kislotnogo kataliza")

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 126, Nr 1, pp 119-122 (USSR)

ABSTRACT: The conception of "general acidic catalysis" is defined as a reaction, the rate constant of which is representable by means of a polynomial, in which every term is proportional to the concentration of any acid existing in the system. In concentrated acidic solutions and in some water-free acids the logarithm of the rate constant in the case of many acidic-catalytical reactions depends linearly on the acidity function H_o of L. P. Hammet (Refs 2,3). The development of the reaction may be represented by the scheme (3)

1) $B + H^+ \rightleftharpoons BH^+$ (rapid); 2) $BH^+ + C \xrightarrow{k_o}$ reaction product (slow). In order to find out whether this scheme applies

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to all general acidic catalyses, the kinetics of the enolization of acetone in an aqueous hydrochloric acid solution with concentrations of from 0.04-11.2-normal was investigated at 15, 25, and 35°. The reaction rate was measured spectrometrically according to the decrease of the bromine content by brominating the acetone. The reaction rate of bromation is, according to reference 6, equal to that of enolization (Fig 1 In the case of very high concentrations of hydrochloric acid, the rate constant is proportional to the concentration of the chloric ion and depends no longer on acidity (Table 1). The data obtained indicate the following mechanism:

1) $CH_3-\overset{O}{\overset{\|}{C}}-CH_3 + H^+ \rightleftharpoons CH_3-\overset{OH}{\overset{+}{C}}-CH_3$ (rapid);

2) $CH_3-\overset{OH}{\overset{+}{C}}-CH_3 + H_2O \xrightarrow{k_{H_2O}} CH_3-\overset{OH}{C}=CH_2 + H_3O^+$ (slow);

3) $CH_3-\overset{OH}{\overset{+}{C}}-CH_3 + Cl^- \xrightarrow{k_{Cl^-}} CH_3-\overset{OH}{C}=CH_2 + HCl$. At a low hydrochloric acid concentration the rate is limited by stage 2a,

and at high concentration by stage 2b. It is concluded herefrom that in the case mentioned the so-called "general acidic catalysis" does not differ basically from "specific acidic catalysis", in which the rate constant is proportional to the concentration of the hydrogen ion. The rate of the reaction is limited by the concentration of the protonized form of the reagents. The catalytic activity of the medium is proportional to its acidity and not to the concentration of an arbitrary acid. Thus, the reaction mechanisms suggested in references 7-11 are refuted. There are 1 figure, 1 table, and 19 references, 5 of which are Soviet.

ASSOCIATION: Tartuskiy gosudarstvennyy universitet (Tartu State University

PRESENTED: December 24, 1958, by V. N. Kondrat'yev, Academician

SUBMITTED: December 11, 1958

TAL'VIK, A. I.

Cand Chem Sci - (diss) "Problem of the mechanism and reaction capacity in the case of several acid-catalytic reactions." Moscow, 1961. 10 pp; (Academy of Sciences USSR, Inst of Chemical Physics); 250 copies; free; (KL, 5-61 sup, 177)

PAL'M, V.A. [Palm, V.]; KHALDNA, Yu.L. [Haldna, J.]; TAL'VIK, A.I. [Talvik, A.]; MEY, A.E. [Mei, A.]

Protonation of carbonyl compounds and the mechanism of the acid hydrolysis of esters. Zhur. fiz. khim. 36 no.11: 2499-2501 N'62. (MIRA 17:5)

1. Tartusskiy gosudarstvennyy universitet.

TALVIK, A.; ZUMAN, P.; EXNER, O.

Studies on the inductive effect. Pt.3. Coll Cz Chem 29 no.5: 1266-1276 My '64.

1. Institute of Polarography, Czechoslovak Academy of Sciences, Prague (for Zuman and Exner). 2. Chemical Department, Tartu State University, Tartu, Estonian S.S.R. (for Talvik).

SHARLAY, I.V.; MOROZENKO, M.A.; TAL'VIK, E.I.

Etiology of the anicteric forms of hepatitis in children. Sov. med. 28 no.6:38-42 Je '65. (MIRA 18:8)

1. Kafedra infektsionnykh bolezney u detey (zav.- prof. A.T. Kuz'micheva, Leningradskogo pediatricheskogo meditsinskogo instituta i otdel virusologii (zav.- prof. A.A. Smorodintsev) Instituta eksperimental'noy meditsiny AMN SSSR.

BULATKINA, Z.G., kand.med.nauk; TAL'VIK, E.I.

Disorder in kidney function following changes in the urine during scarlet fever. Padiatriia 42 no.1:12-15 Ja'63. (MIRA 16:10)

1. Iz kafedry infektsionnykh zabolevaniy u detey (zav. - dotsent A.T.Kuz'micheva) Leningradskogo pediatricheskogo instituta i detskoy infektsionnoy bol'nitsy Sverdlovskogo rayona Leningrada (glavnyy vrach N.A.Nikitina).
(SCARLET FEVER) (KIDNEYS--DISEASES)
(URINE--ANALYSIS AND PATHOLOGY)

TAL'VIK, K. I. and DAVIDOVICH, S. M.

Traktory. 3. ispr. i dopoln. izd. Dop. v kachestve uchebnika dlia shkol traktornykh mekhanikov. Moskva, Sel'khozgiz, 1936. 417 p. illus. (uchebniki i uchebnye posobiia dlia podgotovki s. - kh. kadrov massovoi kvalifikatsii.

Tractors.

DLC: TL233.D3 1936

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

TAL'VIK, Karl Ivanovich

DAVIDOVICH, Semen Markovich; TAL'VIK, Karl Ivanovich; LUR'YE, A.B., redaktor; MOLODTSOVA, M.G., tekhnicheskiy redaktor

[Tractors and automobiles] Traktory i avtomobili. Izd. 10-oe, Moskva, Gos. izd-vo sel'khoz. lit-ry, 1957. 671 p. (MLRA 10:4)
(Tractors) (Automobiles)

EYDUS, Yefim Samoylovich; TAL'VIK, P.I., red.; RULEVA, M.S., tekhn.red.

[Manufacture of medical instruments and parts of apparatus] Tekhnologiia proizvodstva meditsinskikh instrumentov i detalei priborov. Gos.izd-vo med.lit-ry, Leningr.otd-nie, 1958. 319 p. (MIRA 12:4)

(MEDICAL INSTRUMENTS AND APPARATUS)

TAL'VIK, Ye.E., inzh.

Efficient parameters for electric locomotive haulage in iron-ore mines. Gor.zhur. no.8:48-52 Ag '62. (MIRA 15:8)

1. Gosudarstvennyy institut po proyektirovaniyu gornykh predpriyatiy zhelezorudnoy i margantsevoy promyshlennosti i promyshlennosti nemetallicheskikh iskopayemykh, Leningrad.
(Mine railroads)

TAL'VIK, Ye.E., inzh.

Using continuous equipment for rocks in open pits. Gor. zhur. no.3: 5-8 Mr '63. (MIRA 16:4)

1. Gosudarstvennyy institut po proyektorovaniyu gornykh predpriyatiy zhelezorudnoy i margantsevoy promyshlennosti i promyshlennosti nemetallicheskikh iskopayemykh, Leningrad.

TAL'VIK, E. V.

USSR/Nuclear Physics -- Gamma Rays Nov/Dec 48
Nuclear Physics -- Magnetic Spectrograph

"Inner Conversion of Gamma-Radiation of RaC': I, Positron Spectrum," V. V. Gey, G. D. Latyshev, M. V. Pasechnik, E. V. Tal'vik, Physicotech Inst, Acad Sci USSR, 5 pp

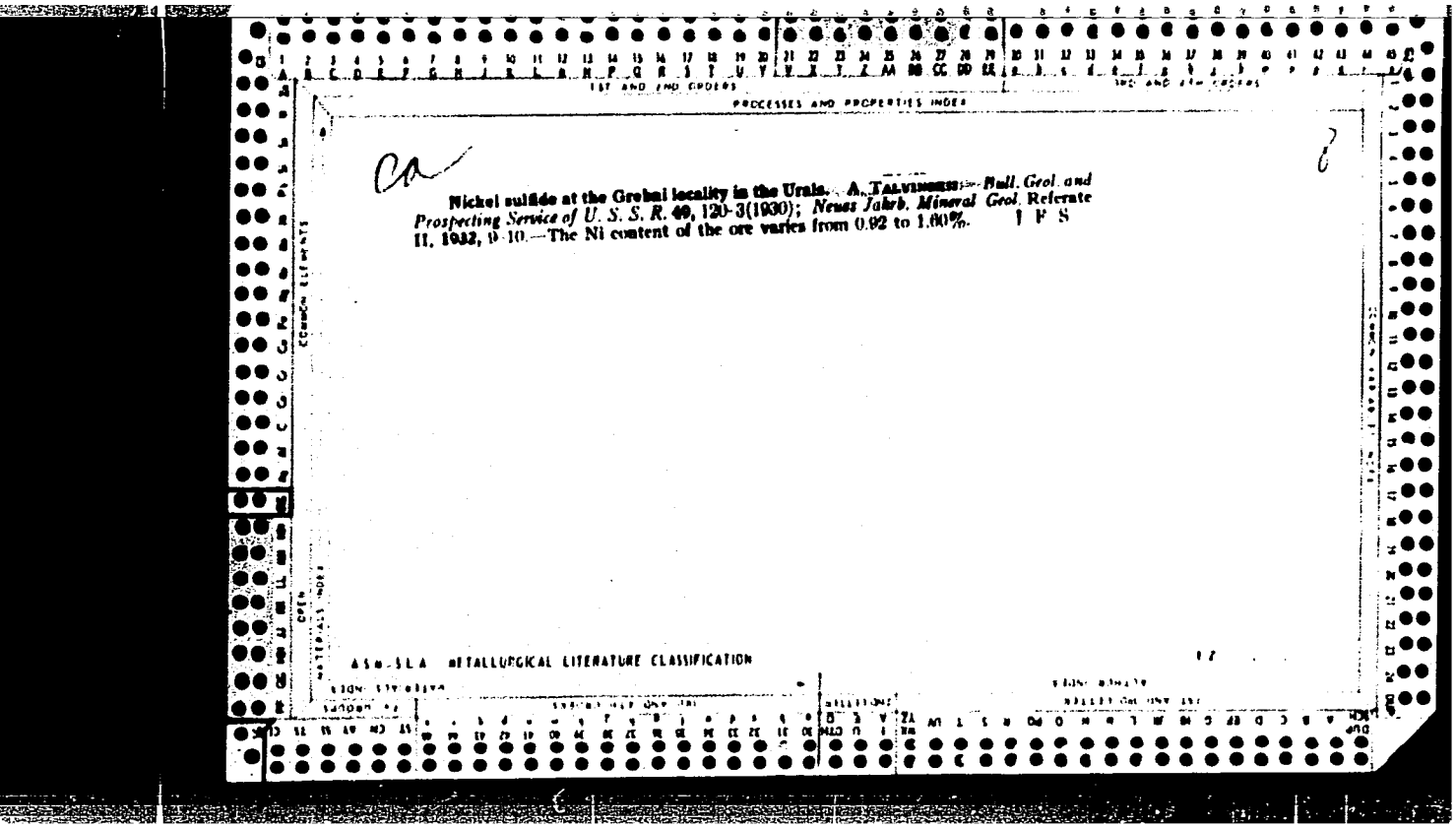
"Iz Ak Nauk SSSR, Ser Fiz" Vol XII, No 6

Continuation of Alikhanov and Latyshev's studies on the subject, using a perfected magnetic spectograph. Presents table of this positron spectrum, contrasting results with those of Ellis, and those of Alikhanov and Latyshev.

PA 25/49T81

TAL'VINSKAYA, I.S., inzh.

Investigating the air-tightness of the automatic valves of piston compressors. Khim. i neft. mashinostr. no.2:18-21 F '65.
(MIRA 18:4)



PROCESSES AND PROPERTIES INDEX

Nickel sulfide at the Grebni locality in the Urals. A. Talvinskii. *Bull. Geol. and Prospecting Service of U. S. S. R.* **49**, 120-3(1930); *Neues Jahrb. Mineral Geol.* Referate II, 1932, 9-10.—The Ni content of the ore varies from 0.92 to 1.60%. I F S

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

TAL'-VIRSKIY, B.B.

14(5) PHASE I BOOK EXPLOITATION SOV/2820

Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki

Razvedochnaya i promyslovaya geofizika, vyp. 26 (Exploration and Industrial Geophysics, Nr 26) Moscow, Gostoptekhizdat, 1958. 87 p. (Series: Obmen proizvodstvennym opytom) 4,000 copies printed.

Ed.: M.K. Polshkov; Exec. Ed.: Ye.G. Pershina; Tech. Ed.: A.S. Polosina.

PURPOSE: This booklet is intended for exploration geophysicists and geologists.

COVERAGE: This collection of articles includes discussions of improvements in seismic exploration techniques and interpretations of data obtained by the refracted and reflected waves method of seismic exploration. Individual articles discuss: the construction of gravimetric maps, improvements in industrial borehole equipment, the standardization of radioactive electro-logging equipment, and methods for computing labor productivity in geophysical operations. A nomogram to facilitate the interpretation of data and conditions when using gamma logging of boreholes is described. References accompany each article.

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Card 2/3

AVAILABLE: Library of Congress

Card 3/3

MM/mg
12-31-59

VOL'VOVSKIY, B.S.; VOL'VOVSKIY, I.S.; TAL'-VIRSKIY, B.B.

Conditions for seismic prospecting in the Fergana Valley. Razved. i prom. geofiz. no. 35:73-77 '60. (MIRA 13:12)
(Fergana--Seismic prospecting)

VOL'VOVSKIY, B.S.; VOL'VOVSKIY, I.S.; TAL'-VIRSKIY, B.B.

Using seismic methods in prospecting for oil and gas deposits in the Fergana Valley. Geol. nefti i gaza 4 no.1:18-25 Ja '60. (MIRA 13:10)

1. Uzbekneftegeofizika.
(Fergana--Seismic prospecting)

S/169/62/000/009/023/120
D228/D307

AUTHOR: Tal'-Virskiy, B. B.

TITLE: Some tectonic features of the Bukharo-Khibinskaya oil and gas province according to the results of geophysical surveys

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 9, 1962, 26, abstract 9A169 (Tr. Vses. n.-i. geologorazved. neft. in-t, no. 30, 1961, 23-37)

TEXT: The following geophysical surveys were executed on the territory of the Bukharo- Khibinskaya oil and gas province: 1) An anomalous geomagnetic field was studied by means of an airborne T-magnetometer. 2) An anomalous gravity field was studied. 3) Much electric prospecting work by the method of deep vertical electric sounding is being fulfilled in the province's south part. 4) Detailed and semi-detailed seismic surveying was carried out along six regional traverses. [Abstracter's note: Complete translation.]

Card 1/1

GAR'KOVETS, V.G.; DIKENSHTEYN, G.Kh.; YENIKEYEV, P.N.; ZHUKOVSKIY, L.G.; ZUBOV, I.P.; IL'IN, V.D.; KAYESH, Yu.V.; TAL'-VIRSKIY, B.B.

Trends in geologic prospecting for oil and gas in the Uzbek S.S.R. (MIRA 16:7)
Trudy VNIGNI no.35:7-26 '61.
(Uzbekistan--Petroleum geology)
(Uzbekistan--Gas, Natural--Geology)

GAR'KOVETS, V.G.; DIKENSHTEYN, G.Kh.; YENIKEYEV, P.N.; ZHUKOVSKIY, L.G.; ZUBOV, I.P.; IL'IN, V.D.; KAYESH, Yu.V.; TAL'-VIRSKIY, B.B.

Problem of prospecting for oil in western Uzbekistan. Geol. nefti i gaza 5 no.7:7-12 Jl '61. (MIRA 14:9)

1. Ministerstvo geologii i okrany nedr SSSR, Glavnoye geologo-razvedochnoye upravleniye Uzbekskoy SSR i Vsesoyuznyy nauchno-issledovatel'skiy geologorazvedochnyy neftyanoy institut.

(Uzbekistan—Petroleum geology)
(Uzbekistan—Gas, Natural—Geology)

TAL'-VIRSKIY, B.B.

Seismic prospecting in the Bukhara-Khiva oil- and gas-bearing area. Trudy VNIGNI no.30:73-78 '61. (MIRA 14:9)
(Uzbekistan--Seismic prospecting)

S/169/63/000/002/087/127
D263/D307

AUTHORS: Tal'-Virskiy, B. B. and Fomin, V. M.

TITLE: On the nature of magnetic and gravitational anomalies of the oil-bearing Bukharo-Khivinskaya district and of Kyzyl Kum

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1963, 15, abstract 2D88 (Uzb. geol. zh., 1962, no. 3, 22-26 (Summary in Uzb.))

TEXT: The anomalous geomagnetic field of the Bukharo-Khivinskaya district is mainly connected with petrographic nonuniformity of the Paleozoic basement. This may also explain the second order gravitational anomalies observed in the north-western part of the Bukharo-Khivinskaya province. Third order anomalies, both in the north-western part of the Bukharo-Khivinskaya province and in conditions of development of mosaic fields of its south-eastern part are caused by local structures such as relief of the Paleoizoic basement and of the overlying Mesozoic and Cainozoic deposits. The characteristic

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structure of the gravitational field of the southern Kyzyl-Kum elevation (Kul'dzhuktau, Auminzatau) is explained by the relief of the basement and deep-seated regional background. [Abstracter's note: Complete translation.]

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ALIYEV, I.M.; ARZHEVSKIY, G.A.; BORISOV, A.A.; GABRIELYANTS, G.A.; DENISEVICH, V.V.; DIKENSHTEYN, G.Kh.,doktor geol.-miner. nauk; ZHUKOVSKIY, L.G.; IL'IN, V.D.; KAYESH, Yu.V.; KRAVCHENKO, N.Ye.; REZVOY, D.P.; SEMENOVICH, V.V.; TAL'-VIRSKIY, B.B.; SHEBUYEVA, I.N.; IONEL', A.G., ved.red.; VORONOVA, V.V., tekhn. red.

[Tectonics, and oil and gas potentials of the western regions of Central Asia] Tektonika i neftegazonost' zapadnykh raionov Srednei Azii. Pod red. G.Kh.Dikenshteina. Moskva, Gostoptekhizdat, 1963. 309 p. (MIRA 16:7)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy geologorazvedochnyy neftyanoy institut.
(Soviet Central Asia--Petroleum geology)
(Soviet Central Asia--Gas, Natural--Geology)

VOL'VOVSKIY, B.S.; VOL'VOVSKIY, I.S.; ISHUTIN, V.V.; SEMENOVICH, V.V.; TAL'-VIRSKIY, B.[illegible]; CHAMO, S.S.

Regional geophysical studies in central Asia and their further trends. Sov.geol. 6 no.12:112-117 D '63. (MIRA 16:12)

1. Nauchno-issledovatel'skaya sredneaziatskaya geofizicheskaya ekspeditsiya kontory "Spetsgeofizika" i Uzbekskiy geofizicheskiy trest.

TAL'-VIRSKIY, B.B.; KOTLYAREVSKIY, L.N.; KREMNEV, I.G.

New data on the structure of the basement in the Fergana intermontane depression. Uzb. geol. zhur. 8 no.5:46-52 '64. (MIRA 18:5)

1. Uzbekskiy geofizicheskiy trest.

ACC NR: AT6028367 (N) SOURCE CODE: UR/0000/65/000/000/0026/0032

AUTHOR: Vol'vovskiy, B. S.; Vol'vovskiy, I. S.; Tal'-Virskiy, B. B.; Shraybman, V. I.

ORG: none

TITLE: Structure of the Earth's crust and upper mantle of the main geostructural zones of western Soviet Central Asia

SOURCE: International Geological Congress. 22d, New Delhi, 1964. Geologicheskiye rezul'taty prikladnoy geofiziki (Geological results of applied geophysics); doklady sovetskikh geologov, problema 2. Moscow, Izd-vo Nedra, 1965, 26-32

TOPIC TAGS: seismology, Earth crust, [redacted] gravity anomaly, basement, meganticline megasyncline, upper mantle, MOHOROVICIC DISCONTINUITY / WESTERN SOVIET CENTRAL ASIA

ABSTRACT: Three different zones distinguished in western Soviet Central Asia are as follows: an area of recent contrasting movements of Tien Shan, the Epihercynian platform and the Kopet-Dag foredeep. These zones include major structural features of the first order, such as arches and depressions in the platform and meganticlines and magasynclines in Tien Shan.. The data obtained from deep seismic sounding and seismological observations made it possible to estimate the crustal thickness of western Soviet Central Asia and to discover certain regularities in variation of the crustal thickness. In general, the data suggest that, in the orogenic area of Tien Shan, the crust is much thicker than within the platform. In addition, Tien Shan

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ACC NR: AT6028367

is characterized by higher gradients of crustal thickness variations and general geomorphic contrasts of the Noho discontinuity. Both in Tien Shan and within the platform, uplifted zones (positive structural featues) are characterized by smaller crustal thicknesses, and zones of depressions, by large thicknesses. The Moho discontinuity and the basement surface practically conform. The thickness of the crust changes mainly on account of the thickness of the overburden covering platform formations. At present the main source of information about the mantle structure is gravity data. However, its interpretation is complicated by the fact that gravity anomalies reflect the total effect of many factors, the most important of which are relief and petrographic nonuniformity of the basement, variations of the thickness of the crust and its layers and, finally, inhomogeneity of subcrustal material. Within Tien Shan and the Turaniam platform, local variations of the residual anomalies correspond to major structural featues of the first order, suggesting the presence of local inhomogeneous types of subcrustal masses in each of these area. Orig. art. has: 3 figures.

SUB CODE: 08/ SUBM DATE: 06Jan65/ ORIG REF: 010

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ACC NR: AR6009029 SOURCE CODE: UR/0169/65/000/010/G003/G003

AUTHOR: Vol'vovskiy, B.S.; Vol'vovskiy, I. S.; Tal'-Virskiy, B.B.; Shraybman, V. I.

ORG: None

TITLE: The structure of earth crust and the top mantle of the basic geostructural zones of Central Asia

SOURCE: Ref. zh. Geofizika, Abs. 10G13

REF SOURCE: Sb. Geol. resul'taty prikl. geofiz. Geofiz. issled. stroyeniya zemn. kory, M., Nedra, 1965, 26-32

TOPIC TAGS: earth crust, earth crust structure, seismology, Central Asia, ~~crust structure~~, Turan, ~~crust structure~~, Tyan'Shan' ~~crust structure, gravitation anomaly~~, gravitation anomaly

ABSTRACT: In the present geological structure of Central Asia, there are regions related to the three basic geotectonic categories of continents, the Turanian epi-Hercynian platform, the alpine folds region of Kopet-Dag, and the orogenic region of Tyan'-Shan'. The relation between surface relief of the folded foundation, the thickness of the earth crust, and the relative density changes of the surface mantle of these regions is discussed. Seismological data indicate a correlation between the geotectonic state, the earth structure, and the character of the density changes of the subcrustal masses. To the Tyan'-Shan' orogenic region (relative to the Turanian platform) corresponds an increase in the crust thickness and a relatively smaller density of subcrustal masses.

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UDC 550.311:551.14

ACC NR: AR6009029

Besides, increased gradients of the earth crust thickness and a high contrast relief of the Mohorovicic surface characterize the Tyan'-Shan'. The Turanian platform and the Tyan'-Shan' are also substantially different in their gravitational characteristics. The gravitational anomaly decreases at the transition from the Turanian platform to the Tyan'-Shan'. [Translation].

SUB CODE: 08/ ~~SUBM DATE: None~~/

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TAL'VIRSKIY, D.B.

TAL'VIRSKIY, D.B. "The Tectonics of the Tobolsk Zone (Based on Data from Seismographic Prospecting and Deep Drilling). Min Petroleum Industry USSR. Glavneftegeofizika (Main Petroleum Geophysical Office). Sci Res Inst of Geophysical Prospecting Methods (NIIGR) Moscow, 1956. (Dissertation for the Degree of Candidate in Geologicomineralogical Science)

So: Knizhnaya Letopis', No. 18, 1956,

TAL'VIRSKIY, D.B.

TAL'VIRSKIY, D.B..

Seismogeological characteristics of rocks of the second structural stage in the western part of the West Siberian Plain. Razved. i prom. geofiz. no.19:8-16 '57. (MIRA 10:11)
(Siberia, Western--Petroleum geology)

TALVIRSKIY, D. B.

14(5) PHASE I BOOK EXPLOITATION SOV/2818

Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki

Razvedochnaya i promyslovaya geofizika, vyp. 21. (Exploration and Industrial Geophysics, No. 21) Moscow, Gostoptekhizdat, 1958. 112 p. (Series: Obmen proizvodstvennym opytom) Errata slip inserted. 4,500 copies printed.

Ed.: A. I. Bogdanov; Exec. Ed.: N. P. Dobrynina; Tech. Ed.: I. G. Fedotova.

PURPOSE: This booklet is intended for geophysical engineering and technical personnel in the petroleum industry.

COVERAGE: Individual articles of this collection discuss improvements in methods of interpreting seismic and gravimetric data, testing of seismic receivers, and the refinement of seismic station amplifiers. A nomogram is described for the rapid computation of magnetic properties of rock samples, and a summary is provided of experience in marking oil contacts.

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Improved methods and equipment of radioactive methods of surveying boreholes are also discussed. References accompany individual articles.

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TAL'VIRSKIY, D.B.

Characteristics of seismographic records and hodographs of refracted wave profiles of foundation depressions in the Ural region of Siberia. Razved. i prom. geofiz. no.21:8-16 '58.
(Ural Mountain region--Prospecting--Geophysical methods)
(Seismic waves) (Hodograph)